WHAT IS CLAIMED IS:

1. A method of energy management in a computer system having a plurality of computation nodes comprising the steps of:

assigning a first computation node to an Operational node set as an Operational node, wherein said first computation node is a fully active node;

assigning a second computation node to a Standby node set as a Standby node, wherein said second computation node has its processor(s) and memory in a minimum power consumption state corresponding to maintaining essential data; and

assigning remaining of said plurality of computation nodes excluding said first and second nodes to a Hibernating node set as hibernating nodes, wherein hibernating nodes are maintained in a powered down state.

2. The method of claim 1 further comprising the steps of:

setting a lower computational workload limit (WL2) and a upper computational workload limit (WL1) for said first computation node; and

comparing an actual average workload (WL) of said first computation node to said WL2 and said WL1.

3. The method of claim 2 further comprising the steps of:

redistributing the workload of said first computation node to a third computation node in said Operational node set when said WL of said first computation node is less than WL2; and

moving said first computation node to said Hibernating node set.

4. The method of claim 2 further comprising the step of:

moving workload from said first computation node to a third computation node

when said WL of said first computation node is greater than WL1 such that said WL of said first computation node and a WL of said third computation node both are less than WL1.

5. The method of claim 2 further comprising the steps of:

moving a fifth computation node from said Hibernating node set to said Standby node set in response to a determination that said WL of said first node is greater than WL1;

moving a sixth computation node from said Standby node set to said Operational node set response to said determination that said WL of said first node is greater than WL1; and

redistributing workload from said first computation node to said sixth computation node such that said WL of said first computation node and a WL of said sixth computation node are both less than WL1.

6. The method of claim 1, wherein said computer system is a massively parallel processors system (MPP).

7. The method of claim 6, wherein said computation node comprises a single processor.

8. The method of claim 1, wherein said computer system is a symmetrical multiprocessor system (SMP).

9. The method of claim 8, wherein said computation node comprises multiple processors coupled to a shared memory unit.

10. The method of claim 1, wherein said first computation node executes a process to minimize energy consumption by a combination of voltage and frequency scaling, wherein said minimized energy consumption enables a required performance of said first computation node.

11. A computer program product for, said computer program product embodied in a machine readable medium for energy management in a computer system having a plurality of computation nodes, including programming for a processor, said computer program comprising a program of instructions for performing the program steps of:

assigning a first computation node to an Operational node set as an Operational node, wherein said first computation node is a fully active node;

assigning a second computation node to a Standby node set as a Standby node, wherein said second computation node has its processor(s) and memory in a minimum power consumption state corresponding to maintaining essential data; and

assigning remaining of said plurality of computation nodes excluding said first and second nodes to a Hibernating node set as hibernating nodes, wherein hibernating nodes are maintained in a powered down state.

12. The computer program product of claim 11 further comprising the program steps of:

setting a lower computational workload limit (WL2) and a upper computational workload limit (WL1) for said first computation node; and

comparing an actual average workload (WL) of said first computation node to said WL2 and said WL1.

13. The computer program product of claim 12 further comprising the program steps of:

redistributing the workload of said first computation node to a third computation node in said Operational node set when said WL of said first computation node is less than WL2; and

moving said first computation node to said Hibernating node set.

14. The computer program product of claim 12 further comprising the program step of:

moving workload from said first computation node to a third computation node when said WL of said first computation node is greater than WL1 such that said WL of said first computation node and a WL of said third computation node both are less than WL1.

15. The computer program product of claim 12 further comprising the program steps of:

moving a fifth computation node from said Hibernating node set to said Standby node set in response to a determination that said WL of said first node is greater than WL1;

moving a sixth computation node from said Standby node set to said Operational node set response to said determination that said WL of said first node is greater than WL1; and

redistributing workload from said first computation node to said sixth computation node such that said WL of said first computation node and a WL of said sixth computation node are both less than WL1.

16. The computer program product of claim 11, wherein said computer system is a massively parallel processors system (MPP).

17. The computer program product of claim 16, wherein said computation node comprises a single processor.

18. The computer program product of claim 11, wherein said computer system is a symmetrical multiprocessor system (SMP).

19. The computer program product of claim 18, wherein said computation node comprises multiple processors coupled to a shared memory unit.

20. The computer program product of claim 11, wherein said first computation node executes a process to minimize energy consumption by a combination of voltage and frequency scaling, wherein said minimized energy consumption enables a required performance of said first computation node.

21. A system for energy management in a computer system having a plurality of computation nodes comprising:

circuitry for assigning a first computation node to an Operational node set as an Operational node, wherein said first computation node is a fully active node;

circuitry for assigning a second computation node to a Standby node set as a Standby node, wherein said second computation node has its processor(s) and memory in a minimum power consumption state corresponding to maintaining essential data; and

circuitry for assigning remaining of said plurality of computation nodes excluding said first and second nodes to a Hibernating node set as hibernating nodes, wherein hibernating nodes are maintained in a powered down state.

22. The system of claim 21 further comprising:

circuitry for setting a lower computational workload limit (WL2) and a upper computational workload limit (WL1) for said first computation node; and

circuitry for comparing an actual average workload (WL) of said first computation node to said WL2 and said WL1.

23. The system of claim 22 further comprising:

circuitry for redistributing the workload of said first computation node to a third computation node in said Operational node set when said WL of said first computation node is less than WL2; and

circuitry for moving said first computation node to said Hibernating node set.

24. The system of claim 22 further comprising:

circuitry for moving workload from said first computation node to a third computation node when said WL of said first computation node is greater than WL1 such

that said WL of said first computation node and a WL of said third computation node both are less than WL1.

25. The system of claim 22 further comprising:

circuitry for moving a fifth computation node from said Hibernating node set to said Standby node set in response to a determination that said WL of said first node is greater than WL1;

circuitry for moving a sixth computation node from said Standby node set to said Operational node set response to said determination that said WL of said first node is greater than WL1; and

circuitry for redistributing workload from said first computation node to said sixth computation node such that said WL of said first computation node and a WL of said sixth computation node are both less than WL1.

26. The system of claim 21, wherein said computer system is a massively parallel processors system (MPP).

27. The system of claim 26, wherein said computation node comprises a single processor.

28. The system of claim 21, wherein said computer system is a symmetrical multiprocessor system (SMP).

29. The system of claim 28, wherein said computation node comprises multiple processors coupled to a shared memory unit.

30. The system of claim 21, wherein said first computation node executes a process to minimize energy consumption by a combination of voltage and frequency scaling, wherein said minimized energy consumption enables a required performance of said first computation node.